

CLAIMS

1. An injector for injecting fuel under high pressure into a combustion chamber of an internal combustion engine, comprising an injector housing; an inlet connectable with a high pressure collecting chamber; a valve body for controlling said inlet from the high pressure collecting chamber and movably received in said housing; a nozzle chamber provided in said housing; a nozzle needle which due to pressure changes in said nozzle chamber can open or close; a sealing spring which biases said nozzle needle, said nozzle needle being provided with pressure stages which are loadable by a hydraulic spring and a pressure acting in said inlet from the high pressure collecting chamber.

2. An injector as defined in claim 1; and further comprising means forming a high pressure side; a ring chamber surrounding said nozzle needle; and a connection formed in said housing between said high pressure side and said ring chamber.

3. An injector as defined in claim 1, wherein said connection is formed as a circumferential ring-shaped groove provided in said housing.

4. An injector as defined in claim 2, wherein said nozzle needle has a ring-shaped surface which is loaded with high pressure through said connection between said high pressure side and said ring chamber.

5. An injector as defined in claim 1; and further comprising a hydraulic spring chamber, said nozzle needle having a transverse surface arranged so that above said transverse surface of said nozzle needle control volumes which are contained in said hydraulic spring chamber act as a force directed opposite to an opening force of said nozzle needle.

6. An injector as defined in claim 1; and further comprising a refilling valve associated with said hydraulic spring chamber.

7. An injector as defined in claim 1; and further comprising a control piston which is arranged in said housing parallel to said nozzle needle, said hydraulic piston having an end surface which is loaded by a control volume of a hydraulic spring chamber and through a connection with high pressure.

8. An injector as defined in claim 1; and further comprising a valve body which is separate from said nozzle needle and formed as a slider which releases a nozzle inlet to a waste oil side.

9. An injector as defined in claim 1; and further comprising means forming restoring forces which counteract an opening force acting on said nozzle needle when high pressure acts on said pressure stage, such that said restoring forces are produced by a pressure loading of a cross-sectional surface through a hydraulic spring chamber and through pressure

which is produced on a ring-shaped surface of said nozzle needle with interposition of end surfaces of a control piston.

10. An injector as defined in claim 1; and further comprising a nozzle guide in said housing; and a hydraulic spring chamber which is filled by a leakage along said nozzle guide.

11. An injector as defined in claim 1; and further comprising a nozzle guide in said housing; and a hydraulic spring chamber which is filled by a leakage along said nozzle guide.